



# **STIC Search Report**

## **Biotech-Chem Library**

**STIC Database Tracking Number: 160101**

**TO: Ralph J Gitomer**  
**Location: 3d65/3c18**  
**Art Unit: 1655**  
**Wednesday, August 10, 2005**

**Case Serial Number: 10/686674**

**From: Noble Jarrell**  
**Location: Biotech-Chem Library**  
**Rem 1B71**  
**Phone: 272-2556**

**Noble.jarrell@uspto.gov**

### **Search Notes**

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(FILE 'HOME' ENTERED AT 13:34:40 ON 10 AUG 2005)

L1 FILE 'HCAPLUS' ENTERED AT 13:36:03 ON 10 AUG 2005  
1 (US2004132128 OR US6770434 OR US2002086329)/PN

FILE 'REGISTRY' ENTERED AT 13:36:59 ON 10 AUG 2005

FILE 'HCAPLUS' ENTERED AT 13:37:01 ON 10 AUG 2005

FILE 'REGISTRY' ENTERED AT 13:37:01 ON 10 AUG 2005

L2 FILE 'WPIX' ENTERED AT 13:37:04 ON 10 AUG 2005  
2 L1

=> b hcap

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=> d all l1 tot

L1 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 2002:505299 HCAPLUS  
DN 137:43884  
ED Entered STN: 05 Jul 2002  
TI Biological assays and biochips mirroring in vivo situations  
IN Shvets, Igor; Kashanin, Dmitriy; Kelleher, Dermot; Williams, Vivienne; Volkov, Yuri  
PA The Provost, Fellows and Scholars of the College of the Holy & Undevided Trinity of Queen Elizabeth near Dublin, Ire.  
SO U.S. Pat. Appl. Publ., 40 pp.  
CODEN: USXXCO  
DT Patent  
LA English  
IC ICM G01N033-53  
ICS G01N033-567; H01L021-00; B05D003-00  
INCL 435007100  
CC 9-1 (Biochemical Methods)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	US 2002086329	A1	20020704	US 2000-750348	20001229 <--
	US 6770434	B2	20040803		
	EP 1221617	A2	20020710	EP 2001-650155	20011231

Search done by Noble Jarrell

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

EP 1252929 A2 20021030 EP 2002-17036 20020725  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR

WO 2003060056 A2 20030724 WO 2002-IE107 20020726  
WO 2003060056 A3 20040226  
WO 2003060056 C1 20050106

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,  
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,  
UA, UG, US, UZ, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
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FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF,  
CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1461414 A2 20040929 EP 2002-751579 20020726  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK

US 2004132128 A1 20040708 US 2003-686674 20031017 <--

PRAI US 2000-750348 A 20001229  
EP 2001-650155 A3 20011231  
EP 2002-17036 A 20020725  
WO 2002-IE107 W 20020726

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2002086329	ICM	G01N033-53
	ICS	G01N033-567; H01L021-00; B05D003-00
	INCL	435007100
US 2002086329	NCL	435/004.000; 422/058.000
	ECLA	B01L003/00C6M <--
EP 1221617	ECLA	B01L003/00C6M
EP 1252929	ECLA	B01L003/00C6M
US 2004132128	NCL	435/040.500
	ECLA	B01L003/00C6M <--

AB Biol. assays using various constructions of biochips are disclosed to mirror in vivo situations. The biochip comprises a microchannel having a liquid outlet port, bubble release port and a liquid outlet port with an associated bubble release port. A multiplicity of tests can be performed often by coating the bore of the microchannel with various adhesion mediating proteins or chemoattractants. The assay assembly comprises a syringe pump feeding the biochip. An inverted microscope, digital camera and recorder are provided. A sample liquid containing cells in suspension is injected slowly through the biochip and the effect of the assay recorded over a long period.

ST bioassay biochip; adhesion protein biochip; chemoattractant biochip

IT Adhesion, biological

Animal tissue culture

Bioassay

Cell

Cell migration

Coating materials

Diffusion

Flow

Microarray technology

Plastic films

(biol. assays and biochips mirroring in vivo situations)

IT Reagents

RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)

(biol. assays and biochips mirroring in vivo situations)

IT Polysiloxanes, uses

RL: DEV (Device component use); NUU (Other use, unclassified); TEM

(Technical or engineered material use); USES (Uses)

(biol. assays and biochips mirroring in vivo situations)

IT Plastics, uses  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(biol. assays and biochips mirroring in vivo situations)

IT Chemotactic factors  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(chemoattractants; biol. assays and biochips mirroring in vivo situations)

IT Blood vessel  
(endothelium, internal bore of biochip coated with cells of; biol. assays and biochips mirroring in vivo situations)

IT Proteins  
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)  
(extracellular matrix-associated, internal bore of biochip coated with; biol. assays and biochips mirroring in vivo situations)

IT Animal cell  
(internal bore of biochip coated with; biol. assays and biochips mirroring in vivo situations)

IT Proteins  
RL: ARG (Analytical reagent use); BSU (Biological study, unclassified); DEV (Device component use); TEM (Technical or engineered material use); ANST (Analytical study); BIOL (Biological study); USES (Uses)  
(internal bore of biochip coated with; biol. assays and biochips mirroring in vivo situations)

IT Flow  
(laminar, multilaminar; biol. assays and biochips mirroring in vivo situations)

IT Samples  
(liquid; biol. assays and biochips mirroring in vivo situations)

IT Pipes and Tubes  
(microchannels; biol. assays and biochips mirroring in vivo situations)

IT Hydrophobicity  
(of coating; biol. assays and biochips mirroring in vivo situations)

IT Extracellular matrix  
(transmigration assay to determine cell migration from endothelium to; biol. assays and biochips mirroring in vivo situations)

IT Endothelium  
(vascular, internal bore of biochip coated with cells of; biol. assays and biochips mirroring in vivo situations)

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Akong; US 5670113 A 1997 HCAPLUS
- (2) Berens; US 5998160 A 1999
- (3) Buechler; US 5679526 A 1997 HCAPLUS
- (4) Buechler; US 5939272 A 1999 HCAPLUS
- (5) Buechler; US 5985579 A 1999 HCAPLUS
- (6) Cubicciotti; US 6287765 B1 2001 HCAPLUS
- (7) Fedun; US 5578492 A 1996
- (8) Fuhr; US 6113768 A 2000
- (9) Goodwin; US 5284753 A 1994
- (10) Goodwin; US 5302515 A 1994 HCAPLUS
- (11) Guirguis; US 4912057 A 1990
- (12) Kalland; US 6042837 A 2000 HCAPLUS
- (13) Kellogg; US 6063589 A 2000 HCAPLUS
- (14) Lemonnier; US 4912037 A 1990
- (15) Lockhart; US 5556752 A 1996 HCAPLUS
- (16) Parce; US 6042709 A 2000 HCAPLUS
- (17) Springer; US 5514555 A 1996 HCAPLUS
- (18) Steel Adam; The Flow Thru Chip: A three Dimensional Biochip Platform. Microarray Biochip Technology 2000, P87
- (19) Swedberg; US 5571410 A 1996 HCAPLUS
- (20) Taylor; US 6103479 A 2000 HCAPLUS
- (21) Tchao; US 5601997 A 1997 HCAPLUS

(22) Valkirs; US 4727019 A 1988 HCAPLUS  
 (23) Vande Woude; US 5645988 A 1997 HCAPLUS  
 (24) Yager; US 5932100 A 1999  
 (25) Yamauchi; US 5723345 A 1998 HCAPLUS  
 (26) Yen-Maguire; US 5543327 A 1996

=> b wpix

FILE 'WPIX' ENTERED AT 13:37:57 ON 10 AUG 2005  
 COPYRIGHT (C) 2005 THE THOMSON CORPORATION

FILE LAST UPDATED: 5 AUG 2005 <20050805/UP>  
 MOST RECENT DERWENT UPDATE: 200550 <200550/DW>  
 DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

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 PLEASE CHECK:  
<http://thomsonderwent.com/support/dwpioref/reftools/classification/code-revision/>  
 FOR DETAILS. <<<  
 'BIX BI,ABEX' IS DEFAULT SEARCH FIELD FOR 'WPIX' FILE

=> d.all l2 tot

L2 ANSWER 1 OF 2 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN  
 AN 2004-602109 [58] WPIX  
 CR 2002-690182 [74]  
 DNN N2004-649300 DNC C2004-286199  
 TI Assay for animal, human and plant cells, comprises delivering a sample  
 liquid of a suspension of cells at a controlled steady flow rate through a  
 biochip, in the form of an elongate enclosed microchannel with an internal  
 bore.  
 DC A89 B04 D16 S03  
 IN KASHANIN, D; KELLEHER, D; SHVETS, I; VOLKOV, Y; WILLIAMS, V  
 PA (QUEE-N) QUEEN ELIZABETH COLLEGE DUBLIN  
 CYC 1  
 PI US 2004132128 A1 20040708 (200458)\* 39 G01N001-30 <--  
 ADT US 2004132128 A1 Cont of US 2000-750348 20001229, US 2003-686674 20031017  
 PRAI US 2000-750348 20001229; US 2003-686674 20031017  
 IC ICM G01N001-30  
 AB US2004132128 A UPAB: 20041223  
 NOVELTY - A biological assay comprises:  
 (a) delivering a sample liquid of a suspension of cells at a  
 controlled steady flow rate through a biochip (50), in the form of an  
 elongate enclosed microchannel (51);  
 (b) causing an externally generated test to be carried out on the  
 sample liquid as it is delivered through the biochip; and  
 (c) examining the sample liquid to observe the effect of the test on  
 the sample.  
 DETAILED DESCRIPTION - A biological assay comprises:

- (a) delivering a sample liquid of a suspension of cells at a controlled steady flow rate through a biochip (50), in the form of an elongate enclosed microchannel (51) with an internal bore;
- (b) causing an externally generated test to be carried out on the sample liquid as it is delivered through the biochip; and
- (c) examining the sample liquid over time to observe the effect of the test on the sample.

An INDEPENDENT CLAIM is also included for a biochip comprising:

- (i) an elongate main microchannel;
- (ii) an inlet port (1) mounted on the proximal end of the main microchannel;
- (iii) an outlet port (4) adjacent its distal end;
- (iv) a separate liquid feeder microchannel connected to the main microchannel, the feeder microchannel having an inlet port; and
- (v) an outlet feeder port connecting the feeder microchannel and the main microchannel.

USE - The invention is for biological assay method of animal cells or human cells, and plant cells. It is useful for microbiology, pharmacy, medicine, biotechnology, and environmental and materials science. It is used in the field of drug discovery and combinatorial chemistry.

ADVANTAGE - A variety of tests can be carried out. Since the tests occur over relatively long periods of time, it is possible to use one microscope to carry out a multiplicity of examinations, as it is usually only necessary to have the activities recorded at discrete time intervals. The invention mimics in vivo testing. With the invention, there is a constant flow of cells, and drug candidate, together with the micro capillary under observation produces much more accurate statistical results. Relatively small volumes of blood can be used for analysis in hospitals. The biochips are disposable. The invention results in a fast and accurate process. Since the biochips are fabricated from a plastics material, it is considerably less expensive than, e.g. silicone micro-machining, which is often used at present for microchips. Using plastics material for biochip enables real-time monitoring with relative ease, by use of an inverted microscope.

DESCRIPTION OF DRAWING(S) - The figure is a plan view of a biochip.

Inlet port 1  
Outlet port 4  
Biochip 50  
Microchannel 51  
Base sheet 52  
Dwg.1/26

FS CPI EPI

FA AB; GI

MC CPI: A12-L04B; A12-V; A12-W11L; B04-C03; B04-F01; B04-N04; B11-C08E6;  
B12-K04; D05-H09; D05-H10  
EPI: S03-E14H; S03-E14J; S03-E15

L2 ANSWER 2 OF 2 WPIX COPYRIGHT 2005 THE THOMSON CORP on STN

AN 2002-690182 [74] WPIX

CR 2004-602109 [58]

DNN N2002-544402 DNC C2002-195034

TI Biological assay, by delivering cell sample at controlled steady flow rate through biochip, causing externally generated test to be carried out on sample liquid, and examining sample to observe the effect of test.

DC A96 B04 C06 D16 P42 S03 S05

IN KASHANIN, D; KELLEHER, D; SHVETS, I; WILLIAMS, V; VOLKOV, Y

PA (QUEE-N) QUEEN ELIZABETH COLLEGE DUBLIN; (KASH-I) KASHANIN D; (KELL-I) KELLEHER D; (SHVE-I) SHVETS I; (VOLK-I) VOLKOV Y; (WILL-I) WILLIAMS V

CYC 101

PI US 2002086329 A1 20020704 (200274)\* 40 G01N033-53 <--

EP 1221617 A2 20020710 (200274) EN G01N033-543

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT

RO SE SI TR

EP 1252929 A2 20021030 (200279) EN B01L003-00

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT

RO SE SI TR

WO 2003060056 A2 20030724 (200358)# EN C12M000-00  
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 MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW  
 W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK  
 DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR  
 KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT  
 RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM  
 ZW

AU 2002366983 A1 20030730 (200425)# G01N033-53  
 US 6770434 B2 20040803 (200451) C12Q001-00 <--  
 EP 1461414 A2 20040929 (200464)# EN C12M001-34  
 R: AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LT LU LV MC  
 MK NL PT RO SE SI SK TR

ADT US 2002086329 A1 US 2000-750348 20001229; EP 1221617 A2 EP 2001-650155  
 20011231; EP 1252929 A2 Div ex EP 2001-650155 20011231, EP 2002-17036  
 20020725; WO 2003060056 A2 WO 2002-IE107 20020726; AU 2002366983 A1 AU  
 2002-366983 20020726; US 6770434 B2 US 2000-750348 20001229; EP 1461414 A2  
 EP 2002-751579 20020726, WO 2002-IE107 20020726  
 FDT EP 1252929 A2 Div ex EP 1221617; AU 2002366983 A1 Based on WO 2003060056;  
 EP 1461414 A2 Based on WO 2003060056

PRAI US 2000-750348 20001229; WO 2002-IE107 20020726;  
 AU 2002-366983 20020726; EP 2002-751579 20020726  
 IC ICM B01L003-00; C12M000-00; C12M001-34; C12Q001-00; G01N033-53;  
 G01N033-543

ICS B05D003-00; G01N033-50; G01N033-567; H01L021-00  
 AB US2002086329 A UPAB: 20041006

NOVELTY - A biological assay (M1), involves delivering a sample liquid of  
 a suspension of cells at a controlled steady flow rate through a biochip  
 (50) in the form of an elongate enclosed microchannel (51), causing an  
 externally generated test to be carried out on the sample liquid as it is  
 being delivered through the biochip and examining the sample liquid over  
 time to observe the effect of the test on the sample.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for the  
 following:

(1) a transmigration assay (M2) to determine cell migration from the  
 endothelium to the extracellular matrix, by delivering a sample liquid  
 comprising a suspension of cells at a controlled steady flow rate through  
 a microchannel forming part of a biochip, delivering a chemoattractant  
 through another microchannel forming part of the biochip and being  
 connected to the other microchannel through a restricted entry of sides  
 less than that of a freely suspended cell, and observing the migration of  
 the cells through the restricted entry to the chemoattractant;

(2) separating (M3) one cell type from a sample liquid containing  
 more than and at least one other one cell type, by delivering a  
 chemoattractant and the sample liquid through a microchannel forming part  
 of a biochip, the liquids forming multilaminar flow and the  
 chemoattractant having an affinity to the cell type allowing the flow to  
 continue sufficiently so as to remove that cell type into the  
 chemoattractant, and subsequently separating the chemoattractant liquid  
 and the sample liquid;

(3) a biochip (I), comprising:

(a) an elongate main microchannel, an inlet port mounted on the  
 proximal end of the main microchannel, an outlet port (1,3) adjacent its  
 distal end, a separate liquid feeder microchannel connected to the main  
 microchannel, the feeder microchannel having an inlet port, and an outlet  
 feeder port connecting the feeder microchannel and the main microchannel;  
 or

(b) two separate elongate main microchannels, a connecting  
 microchannel between the two separate main microchannels, an inlet port  
 mounted on the proximal end of the each of the main microchannels, and an  
 outlet port mounted on the distal end of each microchannel; and

(4) a biochip assembly comprising a number of biochips formed on the  
 one base sheet.

USE - M1 and (I) are useful in biological assay. M2 is useful for  
 determining cell migration from the endothelium to extracellular matrix,  
 and M3 is useful for separating one cell type from a sample liquid

containing one or more cell types. (claimed). The methods and the biochips are adapted for drug discovery and combinatorial chemistry.

ADVANTAGE - A number of tests can be carried out using the biochip assembly. The tests occur over relatively long periods of time, so it is possible to use one microscope to carry out a number of examinations. The biochip reduces the reagent or sample consumption, analysis time and larger transfer rates due to the diminished distances involved. As several assays can be run in parallel, each process in an assay can be manipulated step by step through computer control enabling greater efficiency. This accuracy in combination with higher yields reached to a reduction in waste. This is not only economically favorable but also environmentally beneficial as hazardous chemicals are not involved. The method limits in vivo testing, and produces much more accurate statistical results. The method also allows one to simulate in vivo conditions eliminating many of the disadvantages of the conventional techniques, and hence immediately decreases the need for animal trials, while simultaneously increasing the statistical response as a result of continuous flow assay. The biochips are disposable and can be used for analysis of blood in hospitals. The method imitate natural situation as far as possible, thus overcoming the disadvantages of other techniques resulting in a fast and accurate process.

DESCRIPTION OF DRAWING(S) - The figure shows the plan view of the biochip.

Liquid outlet port 1,3

Bubble release port 2,4

Biochip 50

Microchannel 51

Dwg.1/26

FS CPI EPI GMPI

FA AB; GI; DCN

MC CPI: A12-V03C2; B04-F01; B11-C08C; B11-C08D; B11-C08E; B11-C08E6;  
B12-K04E; C04-F01; C11-C08C; C11-C08D; C11-C08E; C11-C08E6; C12-K04E;  
D05-H; D05-H09  
EPI: S03-E14H; S05-C01

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FILE 'HOME' ENTERED AT 13:38:04 ON 10 AUG 2005

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(FILE 'HOME' ENTERED AT 13:34:40 ON 10 AUG 2005)

FILE 'HCAPLUS' ENTERED AT 13:36:03 ON 10 AUG 2005

L1 1 SEA ABB=ON PLU=ON (US2004132128 OR US6770434 OR US2002086329)  
/PN

FILE 'REGISTRY' ENTERED AT 13:36:59 ON 10 AUG 2005

FILE 'HCAPLUS' ENTERED AT 13:37:01 ON 10 AUG 2005

FILE 'REGISTRY' ENTERED AT 13:37:01 ON 10 AUG 2005

FILE 'WPIX' ENTERED AT 13:37:04 ON 10 AUG 2005

L2 2 SEA ABB=ON PLU=ON (US2004132128 OR US6770434 OR US2002086329)  
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FILE 'HCAPLUS' ENTERED AT 13:48:09 ON 10 AUG 2005

L3 QUE ABB=ON PLU=ON (DRUG SCREENING+OLD OR IMMUNOASSAY+OLD,NT  
OR BIOASSAY OR MICROTITER PLATES OR MICROANALYSIS+NT OR  
LAB-ON-A-CHIP+NT OR ANALYTICAL APPARATUS+NT OR BIOCHIPS OR  
BIOSENSORS OR CLINICAL ANALYZERS OR TEST KITS OR MICROCHEMISTRY  
OR MICROTITRATION)/CT

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E E3+ALL

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E E3+ALL

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L8 4 SEA ABB=ON PLU=ON ("KASHANIN D"/AU OR "KASHANIN DMITRI"/AU  
OR "KASHANIN DMITRIY"/AU OR "KASHANIN DMITRY"/AU)  
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L9 174 SEA ABB=ON PLU=ON ("KELLEHER D"/AU OR "KELLEHER D E"/AU OR  
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P"/AU OR "KELLEHER DERMOT"/AU OR "KELLEHER DERMOT P"/AU)  
E WILLIAMS V/AU

L10 148 SEA ABB=ON PLU=ON ("WILLIAMS V"/AU OR "WILLIAMS V A"/AU OR  
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OR "WILLIAMS V R"/AU OR "WILLIAMS V S"/AU OR "WILLIAMS V V"/AU  
OR "WILLIAMS V Z"/AU)  
E WILLIAMS VIVienne/AU

L11 3 SEA ABB=ON PLU=ON "WILLIAMS VIVienne"/AU  
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L12 714 SEA ABB=ON PLU=ON ("VOLKOV Y"/AU OR "VOLKOV Y N"/AU OR  
"VOLKOV YU"/AU OR "VOLKOV YU A"/AU OR "VOLKOV YU B"/AU OR  
"VOLKOV YU D"/AU OR "VOLKOV YU E"/AU OR "VOLKOV YU F"/AU OR  
"VOLKOV YU G"/AU OR "VOLKOV YU I"/AU OR "VOLKOV YU K"/AU OR  
"VOLKOV YU L"/AU OR "VOLKOV YU M"/AU OR "VOLKOV YU N"/AU OR  
"VOLKOV YU P"/AU OR "VOLKOV YU S"/AU OR "VOLKOV YU T"/AU OR  
"VOLKOV YU V"/AU OR "VOLKOV YU YA"/AU OR "VOLKOV YU YU"/AU OR  
"VOLKOV YURI"/AU OR "VOLKOV YURI N"/AU OR "VOLKOV YURI P"/AU)

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E UNIDIVIDED TRINITY/CS, PA
E UNIDIVIDED TRINITY/CS, PA
L13      36 SEA ABB=ON  PLU=ON  (UNDIV? AND TRINITY AND HOLY AND ELIZ?)/CS,
PA
L14      35197 SEA ABB=ON  PLU=ON  ((LABORATORY WARE+NT OR FLUOROMETRY+NT OR
X-RAY SPECTROSCOPY+OLD,NT OR TITRATION+OLD,NT)/CT OR ANALYSIS/C
W) (L) MICRO?
L15      26730 SEA ABB=ON  PLU=ON  (L3 OR L14) AND (L4 OR L5)
L16      216 SEA ABB=ON  PLU=ON  L15 AND L6
L17      1 SEA ABB=ON  PLU=ON  L16 AND (L7 OR L8 OR L9 OR L10 OR L11 OR
L12 OR L13)
L18      215 SEA ABB=ON  PLU=ON  L16 NOT L17
E PIPES AND TUBES/CT
E E3+ALL
L19      65298 SEA ABB=ON  PLU=ON  "PIPES AND TUBES"+OLD,NT/CT
L20      53 SEA ABB=ON  PLU=ON  L19 AND L18
L21      340 SEA ABB=ON  PLU=ON  L19 (L) (MICROFLUID? OR MICROCHANNEL?)
L22      20 SEA ABB=ON  PLU=ON  L20 AND L21
L23      QUE ABB=ON  PLU=ON  PY<=2000 OR AY<=2000 OR PRY<=2000
L24      11 SEA ABB=ON  PLU=ON  L22 AND L23
L25      1 SEA ABB=ON  PLU=ON  ("136:275662"/AN OR "2002:276206"/AN) AND
L24
L26      10 SEA ABB=ON  PLU=ON  ("133:293180"/AN OR "133:86449"/AN OR
"134:2305"/AN OR "134:307569"/AN OR "135:2522"/AN OR "136:27566
2"/AN OR "137:2709"/AN OR "138:166200"/AN OR "139:288582"/AN
OR "139:361178"/AN OR "2000:493703"/AN OR "2000:756609"/AN OR
"2000:824440"/AN OR "2001:284081"/AN OR "2001:396720"/AN OR
"2002:276206"/AN OR "2002:429168"/AN OR "2003:150480"/AN OR
"2003:810069"/AN OR "2003:875509"/AN) AND L24

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=> b hcap

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=> d all l17 tot

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L17 ANSWER 1 OF 1 HCAPLUS  COPYRIGHT 2005 ACS on STN
AN  2002:505299 HCAPLUS
DN  137:43884
ED  Entered STN: 05 Jul 2002
TI  Biological assays and biochips mirroring in vivo situations
IN  Shvets, Igor; Kashanin, Dmitriy; Kelleher,
    Dermot; Williams, Vivienne; Volkov, Yuri
PA  The Provost, Fellows and Scholars of the College of the Holy & Undevided
    Trinity of Queen Elizabeth near Dublin, Ire.

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Search done by Noble Jarrell

SO U.S. Pat. Appl. Publ., 40 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 IC ICM G01N033-53  
 ICS G01N033-567; H01L021-00; B05D003-00  
 INCL 435007100  
 CC 9-1 (Biochemical Methods)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002086329	A1	20020704	US 2000-750348	20001229
	US 6770434	B2	20040803		
	EP 1221617	A2	20020710	EP 2001-650155	20011231
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	EP 1252929	A2	20021030	EP 2002-17036	20020725
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	WO 2003060056	A2	20030724	WO 2002-IE107	20020726
	WO 2003060056	A3	20040226		
	WO 2003060056	C1	20050106		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1461414	A2	20040929	EP 2002-751579	20020726
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	US 2004132128	A1	20040708	US 2003-686674	20031017
PRAI	US 2000-750348	A	20001229		
	EP 2001-650155	A3	20011231		
	EP 2002-17036	A	20020725		
	WO 2002-IE107	W	20020726		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2002086329	ICM	G01N033-53
	ICS	G01N033-567; H01L021-00; B05D003-00
	INCL	435007100
US 2002086329	NCL	435/004.000; 422/058.000
	ECLA	B01L003/00C6M
EP 1221617	ECLA	B01L003/00C6M
EP 1252929	ECLA	B01L003/00C6M
US 2004132128	NCL	435/040.500
	ECLA	B01L003/00C6M

AB Biol. assays using various constructions of biochips are disclosed to mirror in vivo situations. The biochip comprises a microchannel having a liquid outlet port, bubble release port and a liquid outlet port with an associated bubble release port. A multiplicity of tests can be performed often by coating the bore of the microchannel with various adhesion mediating proteins or chemoattractants. The assay assembly comprises a syringe pump feeding the biochip. An inverted microscope, digital camera and recorder are provided. A sample liquid containing cells in suspension is injected slowly through the biochip and the effect of the assay recorded over a long period.

ST bioassay biochip; adhesion protein biochip; chemoattractant biochip

IT Adhesion, biological  
 Animal tissue culture

Bioassay

Cell  
 Cell migration  
 Coating materials  
 Diffusion  
 Flow  
 Microarray technology  
 Plastic films  
 (biol. assays and biochips mirroring in vivo situations)  
 IT Reagents  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (biol. assays and biochips mirroring in vivo situations)  
 IT Polysiloxanes, uses  
 RL: DEV (Device component use); NUU (Other use, unclassified); TEM  
 (Technical or engineered material use); USES (Uses)  
 (biol. assays and biochips mirroring in vivo situations)  
 IT Plastics, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (biol. assays and biochips mirroring in vivo situations)  
 IT Chemotactic factors  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (chemoattractants; biol. assays and biochips mirroring in vivo  
 situations)  
 IT Blood vessel  
 (endothelium, internal bore of biochip coated with cells of; biol.  
 assays and biochips mirroring in vivo situations)  
 IT Proteins  
 RL: ARG (Analytical reagent use); BSU (Biological study, unclassified);  
 DEV (Device component use); TEM (Technical or engineered material use);  
 ANST (Analytical study); BIOL (Biological study); USES (Uses)  
 (extracellular matrix-associated, internal bore of biochip coated with;  
 biol. assays and biochips mirroring in vivo situations)  
 IT Animal cell  
 (internal bore of biochip coated with; biol. assays and biochips  
 mirroring in vivo situations)  
 IT Proteins  
 RL: ARG (Analytical reagent use); BSU (Biological study, unclassified);  
 DEV (Device component use); TEM (Technical or engineered material use);  
 ANST (Analytical study); BIOL (Biological study); USES (Uses)  
 (internal bore of biochip coated with; biol. assays and biochips  
 mirroring in vivo situations)  
 IT Flow  
 (laminar, multilaminar; biol. assays and biochips mirroring in vivo  
 situations)  
 IT Samples  
 (liquid; biol. assays and biochips mirroring in vivo situations)  
 IT Pipes and Tubes  
 (microchannels; biol. assays and biochips mirroring in vivo situations)  
 IT Hydrophobicity  
 (of coating; biol. assays and biochips mirroring in vivo situations)  
 IT Extracellular matrix  
 (transmigration assay to determine cell migration from endothelium to; biol.  
 assays and biochips mirroring in vivo situations)  
 IT Endothelium  
 (vascular, internal bore of biochip coated with cells of; biol. assays  
 and biochips mirroring in vivo situations)  
 RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
 (1) Akong; US 5670113 A 1997 HCAPLUS  
 (2) Berens; US 5998160 A 1999  
 (3) Buechler; US 5679526 A 1997 HCAPLUS  
 (4) Buechler; US 5939272 A 1999 HCAPLUS  
 (5) Buechler; US 5985579 A 1999 HCAPLUS  
 (6) Cubicciotti; US 6287765 B1 2001 HCAPLUS  
 (7) Fedun; US 5578492 A 1996  
 (8) Fuhr; US 6113768 A 2000

- (9) Goodwin; US 5284753 A 1994
- (10) Goodwin; US 5302515 A 1994 HCAPLUS
- (11) Guirguis; US 4912057 A 1990
- (12) Kalland; US 6042837 A 2000 HCAPLUS
- (13) Kellogg; US 6063589 A 2000 HCAPLUS
- (14) Lemonnier; US 4912037 A 1990
- (15) Lockhart; US 5556752 A 1996 HCAPLUS
- (16) Parce; US 6042709 A 2000 HCAPLUS
- (17) Springer; US 5514555 A 1996 HCAPLUS
- (18) Steel Adam; The Flow Thru Chip: A three Dimensional Biochip Platform.  
Microarray Biochip Technology 2000, P87
- (19) Swedberg; US 5571410 A 1996 HCAPLUS
- (20) Taylor; US 6103479 A 2000 HCAPLUS
- (21) Tchao; US 5601997 A 1997 HCAPLUS
- (22) Valkirs; US 4727019 A 1988 HCAPLUS
- (23) Vande Woude; US 5645988 A 1997 HCAPLUS
- (24) Yager; US 5932100 A 1999
- (25) Yamauchi; US 5723345 A 1998 HCAPLUS
- (26) Yen-Maguire; US 5543327 A 1996

=> d all 126 tot

L26 ANSWER 1 OF 10 HCAPLUS .COPYRIGHT 2005 ACS on STN  
 AN 2003:875509 HCAPLUS  
 DN 139:361178  
 ED Entered STN: 07 Nov 2003  
 TI Device and method for monitoring leukocyte migration  
 IN Kirk, Gregory; Kim, Enoch; Ostuni, Emanuele; Schueller, Olivier; Sweetnam,  
 Paul; Brown, Matthew; Aumond, Bernardo; Benoit, Brian; Cruceta, Johanna  
 PA Surface Logix, Inc., USA  
 SO PCT Int. Appl., 71 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM G01N033-53  
 ICS C12M001-34  
 CC 9-1 (Biochemical Methods)  
 FAN.CNT 23

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003091730	A1	20031106	WO 2003-US12764	20030424
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	US 2003040087	A1	20030227	US 2002-206112	20020729 <--
	US 6893851	B2	20050517		
	US 2003017582	A1	20030123	US 2002-241445	20020912 <--
	CA 2484058	AA	20031106	CA 2003-2484058	20030424
	EP 1502108	A1	20050202	EP 2003-719923	20030424
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRAI	US 2002-374779P	P	20020424		
	US 2002-374781P	P	20020424		
	US 2002-374783P	P	20020424		
	US 2002-206112	A	20020729		
	US 2002-241445	A	20020912		
	US 2002-419980P	P	20021022		
	US 2000-709776	A2	20001108	<--	

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US 2001-307886P	P	20010727
US 2001-323742P	P	20010921
US 2001-328103P	P	20011011
US 2001-330456P	P	20011022
US 2001-334548P	P	20011203
US 2002-363355P	P	20020312
US 2002-97302	A2	20020315
US 2002-97304	A2	20020315
US 2002-97306	A2	20020315
US 2002-97322	A2	20020315
US 2002-97329	A2	20020315
US 2002-97351	A2	20020315
US 2002-374799P	P	20020424
WO 2003-US12764	W	20030424

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES	
WO 2003091730	ICM	G01N033-53	
	ICS	C12M001-34	
US 2003040087	NCL	435/177.000	<--
US 2003017582	NCL	435/288.500; 435/305.300; 435/032.000	<--
AB	A device for monitoring leukocyte migration is provided. The invention also provides a method of using the device to monitor leukocyte migration in the presence of physiol. shear flow and therefore simulate physiol. conditions of a blood vessel in vivo. The invention further provides a method of using the device to high-throughput screen a plurality of test agents. The present invention further provides a flexible assay system and numerous assays that can be used to test biol. interactions and systems. Laminar flow gradients are employed mimic gradient situations present in vivo.		
ST	device monitoring leukocyte migration		
IT	Reaction		
	(Biol.; device and method for monitoring leukocyte migration)		
IT	CD antigens		
	RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)		
	(CD31; device and method for monitoring leukocyte migration)		
IT	Ligands		
	RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)		
	(Integrin binding; device and method for monitoring leukocyte migration)		
IT	Cell adhesion molecules		
	RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)		
	(JAM (junctional adhesion mol.); device and method for monitoring leukocyte migration)		
IT	Molecules		
	(Leukocyte arrest mediator; device and method for monitoring leukocyte migration)		
IT	Molecules		
	(Leukocyte capture mediator; device and method for monitoring leukocyte migration)		
IT	Molecules		
	(Leukocyte migration mediator; device and method for monitoring leukocyte migration)		
IT	Molecules		
	(Leukocyte rolling mediator; device and method for monitoring leukocyte migration)		
IT	Molecules		
	(Leukocyte transmigration mediator; device and method for monitoring leukocyte migration)		
IT	Capillary tubes		
	(Microfluidic network; device and method for monitoring leukocyte migration)		
IT	Cell adhesion molecules		

RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)  
 (PECAM-1 (platelet-endothelial cell adhesion mol. 1); device and method for monitoring leukocyte migration)

IT Ligands  
 RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)  
 (Selectin-binding; device and method for monitoring leukocyte migration)

IT Analytical apparatus  
 Blood vessel  
 Communication  
 Concentration (condition)  
 Configuration  
 Containers  
 Flow  
 High throughput screening  
 Leukocyte  
 Measuring apparatus  
 Microtiter plates  
 Molecules  
 Pipes and Tubes  
 Suspensions  
 Test kits  
 Velocity  
 Video cameras  
 Wells  
 (device and method for monitoring leukocyte migration)

IT Chemokines  
 Selectins  
 RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)  
 (device and method for monitoring leukocyte migration)

IT Blood vessel  
 (endothelium; device and method for monitoring leukocyte migration)

IT Pressure  
 (hydrostatic; device and method for monitoring leukocyte migration)

IT Flow  
 (laminar; device and method for monitoring leukocyte migration)

IT Molecules  
 (leukocyte migration promoter; device and method for monitoring leukocyte migration)

IT Lymphokines  
 RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)  
 (leukocyte migration-inhibiting factor; device and method for monitoring leukocyte migration)

IT Cell migration  
 (leukocyte; device and method for monitoring leukocyte migration)

IT Leukocyte  
 (migration; device and method for monitoring leukocyte migration)

IT Flow  
 (shear, Physiol.; device and method for monitoring leukocyte migration)

IT Endothelium  
 (vascular; device and method for monitoring leukocyte migration)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE  
 (1) Caspi; US 5422270 A 1995  
 (2) Goodwin; US 5302515 A 1994 HCAPLUS  
 (3) Springer; US 5460945 A 1995 HCAPLUS

L26 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2003:810069 HCAPLUS  
 DN 139:288582  
 ED Entered STN: 15 Oct 2003  
 TI Devices and methods for using centripetal acceleration to drive fluid

movement in a microfluidics system for performing biological fluid assays  
 IN Kellogg, Gregory; Kieffer-Higgins, Stephen G.; Jensen, Mona D.; Ommert,  
 Shari; Kob, Mikayla; Pierce, Andrea; Morneau, Keith; Lin, Hsin Chiang  
 PA Tecan Trading AG, Switz.  
 SO U.S., 73 pp., Cont.-in-part of U.S. Ser. No. 83,678.  
 CODEN: USXXAM  
 DT Patent  
 LA English  
 IC ICM G01N001-28  
 INCL 422072000; 422101000; 436045000; 436177000  
 CC 9-1 (Biochemical Methods)  
 FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6632399	B1	20031014	US 1999-315114	19990519 <--
	US 6063589	A	20000516	US 1998-83678	19980522 <--
	US 6302134	B1	20011016	US 2000-526496	20000315 <--
	US 2001001060	A1	20010510	US 2000-745922	20001221 <--
	US 6399361	B2	20020604		
	US 2002027133	A1	20020307	US 2001-981007	20011016 <--
	US 6548788	B2	20030415		
	US 2003195106	A1	20031016	US 2003-414536	20030415 <--
	US 6719682	B2	20040413		
	US 2004089616	A1	20040513	US 2003-684707	20031014 <--
	US 2004191125	A1	20040930	US 2004-823401	20040413 <--
PRAI	US 1998-83678	A2	19980522	<--	
	US 1997-47488P	P	19970523	<--	
	US 1999-315114	A3	19990519	<--	
	US 2000-526496	A3	20000315	<--	
	US 2001-981007	A3	20011016		
	US 2003-414536	A1	20030415		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 6632399	ICM	G01N001-28
	INCL	422072000; 422101000; 436045000; 436177000
US 6632399	NCL	422/072.000; 422/101.000; 436/045.000; 436/177.000
	ECLA	B01F013/00M; B01L003/00C6M; G01N035/00C2 <--
US 6063589	NCL	435/024.000; 366/DIG.003; 422/050.000; 422/068.100; 422/082.010; 422/146.000; 435/004.000; 435/025.000; 435/028.000; 435/032.000; 435/283.100; 435/287.100
	ECLA	B01F013/00M; B01L003/00C6M; G01N035/00C2 <--
US 6302134	NCL	137/074.000; 137/072.000; 137/251.100
	ECLA	B01F013/00M; B01L003/00C6M; F16K031/00C; G01N021/07; G01N035/00C2; H01C017/065B4D; H01R039/64 <--
US 2001001060	NCL	435/283.100; 366/DIG.003; 435/285.200; 435/286.400; 435/287.100
	ECLA	B01F013/00M; B01L003/00C6M; F16K031/00C; G01N021/07; G01N035/00C2; H01C017/065B4D; H01R039/64 <--
US 2002027133	NCL	219/543.000; 435/283.100; 435/285.200; 435/286.400; 435/287.100
	ECLA	B01L003/00C6M; B01L007/00; G01N035/00C2 <--
US 2003195106	NCL	494/084.000; 464/900.000
	ECLA	B01F013/00M; B01L003/00C6M; B01L007/00; F16K031/00C; G01N021/07; G01N035/00C2; H01C017/065B4D; H01R039/64 <--
US 2004089616	NCL	210/749.000; 210/600.000; 210/198.100; 210/322.000
	ECLA	B01F013/00M; B01L003/00C6M; F16K031/00C; G01N021/07; G01N035/00C2; H01C017/065B4D; H01R039/64 <--
US 2004191125	NCL	422/072.000
	ECLA	B01F013/00M; B01L003/00C6M; B01L007/00; F16K031/00C; G01N021/07; G01N035/00C2; H01C017/065B4D; H01R039/64 <--

AB This invention provides methods and apparatus for performing microanalytic and microsynthetic analyses and procedures. Specifically, the invention provides a microsystem platform for use with a micromanipulation device to manipulate the platform by rotation, thereby utilizing the centripetal force resulting from rotation of the platform to motivate fluid movement



through microchannels embedded in the microplatform. The microsystem platforms of the invention are also provided having microfluidics components, resistive heating elements, temperature sensing elements, mixing structures, capillary and sacrificial valves, and methods for using these microsystems platforms for performing biol., enzymic, immunol. and chemical assays.

- ST devices centripetal acceleration drive fluid microfluidic system biol assay
- IT Valves
  - (Capillary and sacrificial; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Acceleration
  - Force
    - (Centripetal; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Apparatus
  - (Microfluidics; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Apparatus
  - (Micromanipulation; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Buffers
  - (Wash; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Air
  - Analysis
  - Analytical apparatus
  - Bioassay
  - Body fluid
  - Capillary tubes
  - Cell
  - Containers
  - Flow
  - Fluids
  - Heating
    - Immunoassay
  - Mixers (processing apparatus)
  - Pore size
  - Rotation
  - Solids
  - Surface
  - Temperature sensors
  - Volume
    - (devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Reagents
  - RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
    - (devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Plastics, uses
  - RL: DEV (Device component use); USES (Uses)
    - (devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Heating systems
  - (elements, Resistive; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)
- IT Analysis
  - (enzymic anal.; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for

performing biol. fluid assays)

IT Blood analysis  
(glucose; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)

IT Hemoglobins  
RL: ANT (Analyte); ANST (Analytical study)  
(glycohemoglobins; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)

IT Hydrocarbons, uses  
RL: DEV (Device component use); USES (Uses)  
(solid, semisolid or viscous liquid; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)

IT Ventilation, mechanical  
(systems; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)

IT Optical properties  
(translucency; devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)

IT 50-99-7, Glucose, analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(devices and methods for using centripetal acceleration to drive fluid movement in a microfluidics system for performing biol. fluid assays)

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD

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- (3) Anon; EP 417305 1991
- (4) Anon; EP 305210 1993 HCAPLUS
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L26 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:150480 HCAPLUS

DN 138:166200

ED Entered STN: 27 Feb 2003

TI Apparatus and methods for correcting for variable velocity in microfluidic systems

IN Kopf-Sill, Anne R.; Chow, Andrea W.; Cohen, Claudia B.; Sundberg, Steven A.; Parce, John Wallace

PA Caliper Technologies Corp., USA

SO U.S., 54 pp., Cont.-in-part of U.S. Provisional Ser. No. 49,013.

CODEN: USXXAM

DT Patent  
 LA English  
 IC ICM C12G001-68  
 ICS G01N021-00; G01N033-558; G01F005-00; G01P003-36  
 INCL 435006000; 435006000; 435007900; 435287100; 435287200; 435288300;  
 435288400; 435288700; 435810000; 435007100  
 CC 9-1 (Biochemical Methods)  
 FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6524790	B1	20030225	US 1998-93542	19980608 <--
	AU 747713	B2	20020523	AU 2000-71755	20001122 <--
	US 2002187513	A1	20021212	US 2002-102149	20020319 <--
	US 6703205	B2	20040309		
	US 2003165960	A1	20030904	US 2003-359395	20030205 <--
PRAI	US 1997-49013P	P	19970609	<--	
	US 1998-76468P	P	19980302	<--	
	US 1998-93542	B3	19980608	<--	
	US 2002-102149	A3	20020319		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 6524790	ICM	C12G001-68
	ICS	G01N021-00; G01N033-558; G01F005-00; G01P003-36
	INCL	435006000; 435006000; 435007900; 435287100; 435287200; 435288300; 435288400; 435288700; 435810000; 435007100
US 6524790	NCL	435/006.000; 204/193.000; 204/194.000; 204/400.000; 204/409.000; 204/412.000; 204/451.000; 204/455.000; 204/601.000; 205/777.500; 210/451.000; 210/505.000; 422/050.000; 422/052.000; 422/055.000; 422/057.000; 422/058.000; 422/068.100; 422/073.000; 422/082.000; 422/082.010; 422/082.090; 422/102.000; 422/108.000; 422/119.000; 435/007.100; 435/007.210; 435/007.900; 435/287.100; 435/287.200; 435/288.300; 435/288.400; 435/288.700; 435/810.000; 436/004.000; 436/006.000; 436/149.000; 436/150.000; 436/151.000; 436/164.000; 436/165.000; 436/172.000; 436/501.000; 436/514.000; 436/518.000; 436/519.000; 436/527.000; 436/531.000; 436/535.000; 436/805.000; 436/809.000
	ECLA	B01L003/00C6; B01L003/00C6E; B01L003/00C6M; G01N027/447; G01N027/447B3A2; G01N027/447C7; G01N033/557 <--
US 2002187513	NCL	435/006.000; 204/400.000; 204/409.000; 204/412.000; 422/055.000; 422/057.000; 422/058.000; 422/082.010; 435/004.000; 435/007.900; 435/287.100; 435/287.200; 435/288.300; 435/288.400; 435/288.700; 435/810.000; 436/149.000; 436/150.000; 436/151.000; 436/164.000; 436/165.000; 436/172.000; 436/514.000; 436/518.000; 436/527.000; 436/531.000; 436/535.000; 436/805.000; 436/809.000
	ECLA	B01L003/00C6; B01L003/00C6E; B01L003/00C6M; G01N027/447; G01N027/447B3A2; G01N027/447C7; G01N033/557 <--
US 2003165960	NCL	435/006.000; 435/007.100; 702/019.000
	ECLA	B01L003/00C6; B01L003/00C6E; B01L003/00C6M; G01N027/447; G01N027/447B3A2; G01N027/447C7; G01N033/557 <--

AB The invention concerns electrokinetic devices having a computer for correcting for electrokinetic effects. Methods of correcting for electrokinetic effects by establishing the velocity of reactants and products in a reaction in electrokinetic microfluidic devices are also provided. These microfluidic devices can have substrates with channels, depressions, and/or wells for moving, mixing and monitoring precise amts. of analyte fluids. Diagrams describing the apparatus assembly and operation are given.

ST app fluid flow velocity fluorophore hybridization

IT Polymerization  
(agent for; apparatus and methods for correcting for variable velocity in  
microfluidic systems)

IT Analytical apparatus  
Animal cell  
Buffers  
Catalysts  
Chromophores  
Computer application  
Drugs  
Electric charge  
Electrokinetic phenomena  
Flow  
Fluorescent substances  
Heat  
High throughput screening  
Labels  
Light  
Micelles  
Molecular association  
Nucleic acid hybridization  
Pipes and Tubes  
Velocity  
(apparatus and methods for correcting for variable velocity in  
microfluidic systems)

IT Amino acids, analysis  
Antibodies and Immunoglobulins  
Antigens  
Avidins  
Biopolymers  
Enzymes, analysis  
Ligands  
Lipids, analysis  
Monomers  
Nucleic acids  
Nucleosides, analysis  
Nucleotides, analysis  
Peptides, analysis  
Polymers, analysis  
Polysaccharides, analysis  
Proteins  
Receptors  
Toxins  
RL: ANT (Analyte); ANST (Analytical study)  
(apparatus and methods for correcting for variable velocity in  
microfluidic systems)

IT Blood  
(components; apparatus and methods for correcting for variable velocity in  
microfluidic systems)

IT Drug delivery systems  
(liposomes; apparatus and methods for correcting for variable velocity in  
microfluidic systems)

IT 58-85-5, Biotin  
RL: ANT (Analyte); ANST (Analytical study)  
(apparatus and methods for correcting for variable velocity in microfluidic  
systems)

RE.CNT 63 THERE ARE 63 CITED REFERENCES AVAILABLE FOR THIS RECORD

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- (3) Anon; WO 9800231 1998 HCAPLUS
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L26 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2002:429168 HCAPLUS

DN 137:2709

ED Entered STN: 07 Jun 2002

TI Optical switching and sorting of biological samples and microparticles transported in a micro-fluidic device, including integrated bio-chip devices

IN Wang, Mark; Ata, Erhan; Esener, Sadik

PA The Regents of the University of California, USA

SO PCT Int. Appl., 52 pp.

CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM G01N  
 CC 9-1 (Biochemical Methods)  
 Section cross-reference(s): 73

## FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002044689	A2	20020606	WO 2001-US45058	20011128 <--
	WO 2002044689	C1	20021114		
	WO 2002044689	A3	20030424		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,				
	HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,				
	LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU,				
	SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN,				
	YU, ZA, ZW				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,				
	KG, KZ, MD, RU, TJ, TM, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB,				
	GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA,				
	GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002030530	A5	20020611	AU 2002-30530	20011128 <--
	US 2002181837	A1	20021205	US 2001-998012	20011128 <--
	US 6778724	B2	20040817		
	EP 1352093	A2	20031015	EP 2001-990768	20011128 <--
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2004528156	T2	20040916	JP 2002-546188	20011128 <--
	US 2005164158	A1	20050728	US 2004-848972	20040518 <--
PRAI	US 2000-253644P	P	20001128	<--	
	US 2001-998012	A	20011128		
	WO 2001-US45058	W	20011128		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2002044689	ICM	G01N
WO 2002044689	ECLA	G21K001/00N; H05H003/04
US 2002181837	NCL	385/016.000; 422/100.000; 428/188.000
	ECLA	G21K001/00N; H05H003/04
JP 2004528156	FTERM	2G052/AA40; 2G052/AD29; 2G052/DA09; 2G052/ED00; 2H052/AF19; 4G075/AA27; 4G075/BB05; 4G075/CA36; 4G075/CA38; 4G075/EE12; 4G075/FA01; 4G075/FA11; 4G075/FC02
US 2005164158	NCL	435/002.000

AB Small particles, for example 5  $\mu$ m diameter microspheres or cells, within, and moving with, a fluid, normally water, that is flowing within microfluidic channels within a radiation-transparent substrate, typically molded PDMS clear plastic, are selectively manipulated, normally by being pushed with optical pressures forces, with a laser light switching beam, preferably as arises from vertical cavity surface emitting lasers (VCSELs) operating in Laguerre-Gaussian mode, at branching junctions, such as an "X", in the microfluidic channels so as to enter into selected downstream branches OUTPUT 1, OUPUT 2, thereby realizing switching and sorting of particles, including in parallel. Transport of the small particles thus transpires by microfluidics while manipulation in the manner of optical tweezers arises either from pushing due to optical scattering force, or from pulling due to an attractive optical gradient force. Whether pushed or pulled, the particles within the flowing fluid may be optically sensed, and highly-parallel. Low-cost, cell- and particle-anal. devices efficiently realized, including as integrated on bio-chips.

ST optical switching sorting microparticle microfluidic device; integrated biochip optical switch sorting microsphere cell; tweezer optical particle switching sorting analysis

IT Lasers

(VCSEL (vertical cavity surface emitting laser), optical switch;

- optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Light scattering  
(as optical force; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Samples  
(biol.; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Pipes and Tubes  
(channels; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Silicone rubber, uses  
Silicone rubber, uses  
RL: DEV (Device component use); USES (Uses)  
(di-Me; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Cytometry  
(flow, optical microfluidic apparatus; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Microarray technology  
(integrated; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Flow  
(microfluidics; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Fluids  
(microfluids; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Plastics, uses  
RL: DEV (Device component use); USES (Uses)  
(molded clear; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Analytical apparatus  
Cell  
Fibroblast  
Microarray technology  
Microparticles  
Microspheres  
Optical switching  
Particles  
(optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Laser radiation  
(optical switching beam; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Apparatus  
(optical tweezers; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Force  
(optical; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)
- IT Separators

(sorters; optical switching and sorting of biol. samples and microparticles transported in microfluidic device, including integrated biochip devices)

L26 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2002:276206 HCAPLUS

DN 136:275662

ED Entered STN: 12 Apr 2002

TI Microfluidic devices and methods of use

IN Chou, Hou-Pü; Eyal, Shulamit; Fu, Anne Y.; Quake, Stephen R.

PA California Institute of Technology, USA

SO PCT Int. Appl., 119 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12Q001-68

CC 9-1 (Biochemical Methods)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002029106	A2	20020411	WO 2001-US30933	20011002 <--
	WO 2002029106	A3	20020711		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,				
	GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,				
	LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,				
	PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,				
	UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,				
	DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,				
	BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2002011389	A5	20020415	AU 2002-11389	20011002 <--
	US 2002123033	A1	20020905	US 2001-970453	20011002 <--
	US 2002127736	A1	20020912	US 2001-970122	20011002 <--
	EP 1322936	A2	20030702	EP 2001-979417	20011002 <--
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI	US 2000-237937P	P	20001003	<--	
	US 2000-237938P	P	20001003	<--	
	WO 2001-US30933	W	20011002		

# CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2002029106	ICM	C12Q001-68
WO 2002029106	ECLA	B01L003/00C6M; B81B001/00H; F04B011/00; F04B019/00M; F04B043/04M; G01N015/14; G01N015/14H1 <--
AU 2002011389	ECLA	G01N015/14H1 <--
US 2002123033	NCL	435/004.000; 436/063.000; 204/451.000; 204/600.000; 422/073.000
	ECLA	B01L003/00C6M; B81B001/00H; F04B019/00M; F04B043/04M; G01N015/14G; G01N015/14H1 <--
US 2002127736	NCL	436/180.000; 422/100.000; 422/102.000; 422/103.000
	ECLA	B01L003/00C6M; B81B001/00H; F04B011/00; F04B019/00M; F04B043/04M; G01N015/14H1 <--

AB A microfluidic device comprises pumps, valves, and fluid oscillation dampers. In a device employed for sorting, an entity is flowed by the pump along a flow channel through a detection region to a junction. Based upon an identity of the entity determined in the detection region, a waste or collection valve located on opposite branches of the flow channel at the junction are actuated, thereby routing the entity to either a waste pool or a collection pool. A damper structure may be located between the pump and the junction. The damper reduces the amplitude of oscillation pressure in the flow channel due to operation of the pump, thereby lessening oscillation in velocity of the entity during sorting process. The microfluidic device may be formed in a block of elastomer material, with thin membranes of the elastomer material deflectable into the flow



channel to provide pump or valve functionality. Velocity independent cytometry methods and apparatuses are also described.

ST microfluidic device sorting cytometry app

IT Optical modulators  
(acoustooptical; microfluidic devices and methods of use)

IT Cell  
(as analyte; microfluidic devices and methods of use)

IT Flow  
(capillary; microfluidic devices and methods of use)

IT Pipes and Tubes  
(channels; microfluidic devices and methods of use)

IT Nucleotides, biological studies  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(determination of number of, in oligonucleotide; microfluidic devices and methods of use)

IT Silicone rubber, uses  
RL: DEV (Device component use); USES (Uses)  
(di-Me, Me hydrogen, Me vinyl; microfluidic devices and methods of use)

IT Cytometry  
(flow; microfluidic devices and methods of use)

IT Vibration dampers  
(fluid oscillation; microfluidic devices and methods of use)

IT Wave  
(fluid, dampers; microfluidic devices and methods of use)

IT Optical detectors  
(fluorescence; microfluidic devices and methods of use)

IT Oligonucleotides  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(labeled, with fluorescent mols.; microfluidic devices and methods of use)

IT Apparatus  
CCD cameras  
Computer program  
Cytometry  
Electroosmosis  
Flow  
Fluorescent substances  
Laser induced fluorescence  
Lasers  
Membranes, nonbiological  
Pressure  
Pumps  
Valves  
Velocity  
(microfluidic devices and methods of use)

IT Organic compounds, analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(microfluidic devices and methods of use)

IT DNA  
Oligonucleotides  
RL: ANT (Analyte); PRP (Properties); ANST (Analytical study)  
(microfluidic devices and methods of use)

IT Rubber, uses  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(microfluidic devices and methods of use)

IT Fluids  
(microfluids; microfluidic devices and methods of use)

IT Pumps  
(peristaltic; microfluidic devices and methods of use)

IT Separators  
(sorters; microfluidic devices and methods of use)

IT 143413-85-8, YOYO-1  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(microfluidic devices and methods of use)

L26 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2001:396720 HCAPLUS  
 DN 135:2522  
 ED Entered STN: 01 Jun 2001  
 TI A microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and analysis of polarizable particles  
 IN Austin, Robert H.; Tegenfeldt, Jonas O.; Cox, Edward C.; Chou, Chia-fu; Bakajin, Olgica  
 PA Princeton University, USA  
 SO PCT Int. Appl., 55 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM B01D  
 CC 9-1 (Biochemical Methods)  
 Section cross-reference(s): 3

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001037958	A2	20010531	WO 2000-US41929	20001106 <--
	WO 2001037958	A3	20020103		
	W:		AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM		
	RW:		GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG		
	AU 2001045040	A5	20010604	AU 2001-45040	20001106 <--
	US 6824664	B1	20041130	US 2000-707892	20001106 <--
PRAI	US 1999-163523P	P	19991104		<--
	WO 2000-US41929	W	20001106		<--

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2001037958	ICM	B01D
WO 2001037958	ECLA	B01L003/00C6M; B01L007/00D; B03C005/02B4; C12N015/10A2B; C12Q001/68B10A
US 6824664	NCL	204/643.000
	ECLA	B03C005/02B2; B03C005/02B4

AB The present invention further provides a device for the integrated micromanipulation, amplification, and anal. of polarized particles such as DNA comprises a microchip which contains constrictions of insulating material for dielectrophoresis powered by an a.c. or d.c. signal generator, and attached to a hot source that can be heated to specific temps. Nucleic acids can be heated and cooled to allow for denaturation, and the annealing of complementary primers and enzymic reactions, as in a thermocycling reaction. After such a reaction has been completed at the constriction, the dielectrophoretic field can be switched to a direct field to release the product and direct it through a matrix for fractionation. The device includes data anal. equipment for the control of these operations, and imaging equipment for the anal. of the products. The invention permits the efficient handling of minute samples in large nos., since reactions occur while sample material is trapped between constrictions. Because the positioning, reactions, and release into a fractioning matrix all occur at the constriction which serves as a focusing locus, the need to transfer samples into different tubes is eliminated, thus increasing the efficiency and decreasing the possibility of damage to the samples.

ST microfluidic device electrodeless dielectrophoresis polarizable particle;  
 IT Reaction  
 (amplification; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of

- polarizable particles)
- IT Materials handling
  - (apparatus; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Polyamides, uses
  - RL: DEV (Device component use); USES (Uses)
  - (as substrate; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Biotechnology
  - (biochips; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Capillary tubes
  - (channels; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Glass, uses
  - RL: DEV (Device component use); USES (Uses)
  - (chip; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Photolithography
  - (constrictions formed on substrate by etching by; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Information systems
  - (data, device for anal. of; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT DNA
  - RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)
  - (double-stranded; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Molecules
  - (fractionation of; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Analytical apparatus
  - Microanalysis
    - (microarray; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Electric insulators
  - (microchip having constrictions of; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)
- IT Analytical apparatus
  - Apparatus
    - Cell
      - DNA microarray technology
      - DNA sequence analysis
      - Dielectric polarization
      - Dielectrophoresis
      - Electric current
      - Electrodes
      - Electrophoresis
      - Electrophoresis apparatus
      - Fractionation
      - Heaters
      - Nucleic acid hybridization
      - Optical imaging devices
      - PCR (polymerase chain reaction)
      - Thermal cycling
        - (microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable

particles)

IT DNA  
Nucleic acids  
Polynucleotides  
RNA  
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)  
(microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT Enzymes, uses  
Primers (nucleic acid)  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT Flow  
(microfluidic; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT Samples  
(minute and in large nos.; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT Polymers, analysis  
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)  
(particles; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT Particles  
(polarizable; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT Syringes  
(pumps; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT DNA  
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)  
(single-stranded; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT Pumps  
(syringes; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT 143413-84-7, TOTO 1 163795-75-3, SYBR Green I  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(DNA stained with; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT 502-86-3, p-Xylylene 7631-86-9, Silica, uses 9011-14-7, PMMA 9016-00-6, PDMS 31900-57-9, PDMS  
RL: DEV (Device component use); USES (Uses)  
(as substrate; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

IT 7440-21-3, Silicon, uses 14808-60-7, Quartz, uses  
RL: DEV (Device component use); USES (Uses)  
(constrictions of; microfluidic device with electrodeless dielectrophoresis for integrated micromanipulation and anal. of polarizable particles)

L26 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN  
AN 2001:284081 HCAPLUS  
DN 134:307569  
ED Entered STN: 20 Apr 2001  
TI Microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage  
IN Farinas, Javier Anibal; Wada, H. Garrett  
PA Caliper Technologies Corp., USA

SO PCT Int. Appl., 70 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM C12N013-00  
 ICS C12Q001-02; G01N001-30; G01N015-06  
 CC 9-1 (Biochemical Methods)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001027253	A1	20010419	WO 2000-US27659	20001006 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	CA 2385618	AA	20010419	CA 2000-2385618	20001006 <--
	EP 1222257	A1	20020717	EP 2000-975224	20001006 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
	JP 2003511682	T2	20030325	JP 2001-530458	20001006 <--
	US 6537771	B1	20030325	US 2000-684313	20001006 <--
	US 2004009545	A1	20040115	US 2003-349396	20030121 <--
	US 6759191	B2	20040706		
	US 2004048239	A1	20040311	US 2003-655697	20030905 <--
PRAI	US 1999-158323P	P	19991008	<--	
	US 1999-168792P	P	19991202	<--	
	US 2000-229951P	P	20000901	<--	
	US 2000-684313	A3	20001006	<--	
	WO 2000-US27659	W	20001006	<--	
	US 2003-349396	A1	20030121		

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2001027253	ICM	C12N013-00
	ICS	C12Q001-02; G01N001-30; G01N015-06
WO 2001027253	ECLA	G01N001/30; G01N033/50D
US 6537771	NCL	435/029.000; 435/004.000; 435/007.200; 435/968.000
	ECLA	G01N001/30; G01N031/22; G01N033/50D
US 2004009545	NCL	435/004.000; 435/283.100; 435/285.200; 435/286.500
	ECLA	G01N001/30; G01N031/22; G01N033/50D
US 2004048239	NCL	435/004.000
	ECLA	G01N001/30; G01N031/22; G01N033/50D

AB Transmembrane potential measurement methods using cationic dyes, and anionic dyes are provided. Compns. of the cationic and anionic dyes and microfluidic systems which include the dyes and membranes are provided in conjunction with processing elements for transmembrane potential measurements. The time course of SYTO 62 (a cyclic-substituted unsym. cyanine dye) uptake by THP-1 cells depended on transmembrane potential. The changes in the cell transmembrane potential were detected in a microfluidic processor.

ST Nernstein voltage sensitive dye transmembrane potential; membrane potential detn Nernstein voltage dye; microfluidic app dye transmembrane voltage; SYTO 62 uptake THP1 cell transmembrane potential

IT Animal cell line  
 (3T3; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Animal cell line  
 (CHO; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Animal cell line  
 (COS; microfluidic devices and use of Nernstein voltage sensitive dyes

- in measuring transmembrane voltage)
- IT **Animal cell line**  
(HEK; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Dyes**  
(Nernstein voltage-sensitive; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Animal cell line**  
(THP-1; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Dyes**  
(acid; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Dyes**  
(aryl; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Membrane potential**  
(biol.; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Nucleic acids**  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)  
(cationic dye staining; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Cyanine dyes**  
**Dyes**  
(cationic; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Bone**  
Cat (Felis catus)  
Dog (Canis familiaris)  
Livestock  
Muscle  
Nerve  
Primate  
Rodent  
Skin  
(cell of; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Proteins, specific or class**  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)  
(cell-attached, as transmembrane potential modulators; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Cyanine dyes**  
(cyclic-substituted unsym.; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Polarization**  
(depolarization; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Cyanine dyes**  
(derivs., dyes with short alkyl tails; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Embryo, animal**  
(ectoderm, cell of; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Embryo, animal**  
(entoderm, cell of; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Polarization**  
(hyperpolarization, biol.; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)
- IT **Capillary tubes**  
**Computers**  
(in lab-on-a-chip system; microfluidic devices and use of

Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Biological transport  
(ion; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Animal cell  
(mammalian; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Embryo, animal  
(mesoderm, cell of; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Animal cell  
Animal tissue culture  
Bacteria (Eubacteria)  
Blood cell  
Buffers  
Cell differentiation  
Cell membrane  
Chloroplast  
Containers  
Electric potential  
Flow  
Fluorometry  
Fungi  
HeLa cell  
Membrane, biological  
Membrane potential  
Membranes, nonbiological  
Microtiter plates  
Mitochondria  
Plant cell  
Plant tissue culture  
Sensors  
T cell (lymphocyte)  
(microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Apparatus  
(microfluidic; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Fluidization  
(microfluidization; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Toxins  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)  
(neurotoxins, transmembrane potential modulators; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Animal tissue culture  
(primary; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Drugs  
Molecules  
(transmembrane potential modulators; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Antibodies  
Carbohydrates, biological studies  
Chemokines  
Cytokines  
Hormones, animal, biological studies  
Ligands  
Lipids, biological studies  
Neurotransmitters  
Peptides, biological studies  
Proteins, general, biological studies  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)

(transmembrane potential modulators; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Biological transport  
(uptake; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT Organelle  
(vesicle; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 63560-89-4, DiBAC4(5)  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(DiBAC4(5); microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 155703-07-4, DiSBAC2(3)  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(DiSBAC2(3); microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 335080-22-3, RGA 30  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(RGA 30; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 14808-60-7, Quartz, uses  
RL: DEV (Device component use); USES (Uses)  
(chip containing microchannels, in lab-on-a-chip system; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 16969-45-2, Pyridinium  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(derivs., dyes; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 103938-30-3, Bis-oxonol  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(dyes; microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 288-47-1, Thiazole 23491-45-4, Hoechst 33258 23491-52-3, Hoechst 33342  
61389-30-8, Oxonol V 64724-75-0, Oxonol VI 70363-83-6, DiBAC4(3)  
79811-16-8, WW 781 173080-67-6, SYTO 11 173080-68-7, SYTO 12  
173080-69-8, SYTO 13 173080-70-1, SYTO 14 173080-71-2, SYTO 15  
173080-72-3, SYTO 16 189233-66-7, SYTO 17 211566-66-4, Hexidium iodide  
235422-34-1, SYTO 59 253878-63-6, SYTO 25 286951-08-4, SYTO 62  
314730-55-7, SYTO 18 335078-81-4, SYTO 40 335078-82-5, SYTO 41  
335078-83-6, SYTO 42 335078-84-7, SYTO 43 335078-85-8, SYTO 44  
335078-86-9, SYTO 45 335078-89-2, SYTO 20 335078-91-6, SYTO 21  
335078-92-7, SYTO 22 335078-93-8, SYTO 23 335078-94-9, SYTO 24  
335079-08-8, SYTO 80 335079-09-9, SYTO 81 335079-10-2, SYTO 82  
335079-11-3, SYTO 83 335079-12-4, SYTO 84 335079-13-5, SYTO 85  
335079-14-6, SYTO 60 335079-15-7, SYTO 61 335079-16-8, SYTO 63  
335079-17-9, SYTO 64 335079-40-8, 2DS7J1  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

IT 63-39-8, UTP 71-52-3, Bicarbonate ion, biological studies 7447-40-7, Potassium chloride, biological studies 12408-02-5, Hydrogen ion, biological studies 14127-61-8, Calcium ion, biological studies 16887-00-6, Chloride ion, biological studies 17341-25-2, Sodium ion, biological studies 23593-75-1, Clotrimazole 24203-36-9, Potassium ion, biological studies 24345-16-2, Apamin 56092-81-0, Ionomycin 77734-91-9, Palytoxin 145808-47-5, Margatoxin  
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)  
(microfluidic devices and use of Nernstein voltage sensitive dyes in measuring transmembrane voltage)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE  
(1) Knisley; US 5995871 A 1999  
(2) Krauthamer; US 5239998 A 1993  
(3) Makler; US 5124141 A 1992 HCAPLUS



- (4) Mallik; US 4741898 A 1988  
 (5) Seitz; US 4762799 A 1988 HCAPLUS  
 (6) Tsien; US 5661035 A 1997 HCAPLUS  
 (7) Tsien; US 6107066 A 2000 HCAPLUS  
 (8) Xu; US 5874668 A 1999

L26 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:824440 HCAPLUS

DN 134:2305

ED Entered STN: 24 Nov 2000

TI Focusing of microparticles in microfluidic systems

IN Wada, H. Garrett; Kopf-Sill, Anne R.; Alajoki, Marja Liisa; Parce, J. Wallace; Wang, Benjamin N.; Chow, Andrea W.; Dubrow, Robert S.

PA Caliper Technologies Corp., USA

SO PCT Int. Appl., 91 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12Q001-00

CC 9-1 (Biochemical Methods)

Section cross-reference(s): 13

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000070080	A1	20001123	WO 2000-US13294	20000511 <--
	W:			AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	
	RW:			GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG	
	CA 2373347	AA	20001123	CA 2000-2373347	20000511 <--
	EP 1179087	A1	20020213	EP 2000-932435	20000511 <--
	R:			AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO	
	AU 770678	B2	20040226	AU 2000-50158	20000511 <--
PRAI	US 1999-134472P	P	19990517 <--		
	WO 2000-US13294	W	20000511 <--		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000070080	ICM	C12Q001-00
WO 2000070080	ECLA	B01F013/00M; B01J019/00R; B01L003/00C6M; G01N015/14C; G01N027/447B; G01N027/447C7 <--

AB Methods and systems for particle focusing to increase assay throughput in microscale systems are provided. The invention includes methods for providing substantially uniform flow velocity to flowing particles in microfluidic devices. Methods of sorting members of particle populations, such as cells and various subcellular components are also provided. Integrated systems in which particles are focused and/or sorted are addnl. included. Microfluidic devices were used to detect apoptosis by TUNEL and annexin-V assays.

ST focusing microparticle microfluidic app; apoptosis detection flow device TUNEL assay; annexin V apoptosis assay particle focusing system

IT Dyes

(DNA; focusing of microparticles in microfluidic systems)

IT Cytometry

(FACS (fluorescence-activated cell sorting); focusing of microparticles in microfluidic systems)

IT DNA

RL: ANT (Analyte); ANST (Analytical study)

(TUNEL and annexin-V assay detection of; focusing of microparticles in microfluidic systems)

IT Annexins  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (V, biotinylated; focusing of microparticles in microfluidic systems)

IT Annexins  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (V; focusing of microparticles in microfluidic systems)

IT Flow  
 (capillary; focusing of microparticles in microfluidic systems)

IT Coating materials  
 (elec. conductive, microchannel; focusing of microparticles in microfluidic systems)

IT Heating systems  
 (elements; focusing of microparticles in microfluidic systems)

IT Control apparatus  
 (flow control regulators; focusing of microparticles in microfluidic systems)

IT Cytometry  
 (flow; focusing of microparticles in microfluidic systems)

IT Optical detectors  
 (fluorescence; focusing of microparticles in microfluidic systems)

IT Analytical apparatus  
 Apoptosis  
 Capillarity  
 Capillary tubes  
 Cell  
 Computers  
 Density  
 Electric furnaces  
 Electrokinetic phenomena  
 Flow  
 Fluids  
 Fluorometry  
 Force  
 Heating  
 Microparticles  
 Molecules  
 Particles  
 Pressure  
 Sensors  
 Velocity  
 (focusing of microparticles in microfluidic systems)

IT Reagents  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (focusing of microparticles in microfluidic systems)

IT Nucleotides, reactions  
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study);  
 RACT (Reactant or reagent); USES (Uses)  
 (labeled; focusing of microparticles in microfluidic systems)

IT Apparatus  
 (microfluidic; focusing of microparticles in microfluidic systems)

IT Fluidization  
 (microfluidization; focusing of microparticles in microfluidic systems)

IT 146368-14-1D, Cy5, conjugates with streptavidin  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (Cy5; focusing of microparticles in microfluidic systems)

IT 286951-08-4, SYTO-62  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (DNA dye; focusing of microparticles in microfluidic systems)

IT 58-85-5D, Biotin, conjugates with annexin V 9013-20-1D, Streptavidin,  
 conjugates with Cy5 148504-34-1, Calcein-AM  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (focusing of microparticles in microfluidic systems)

IT 7689-03-4, Camptothecin  
 RL: ARG (Analytical reagent use); BPR (Biological process); BSU  
 (Biological study, unclassified); ANST (Analytical study); BIOL

(Biological study); PROC (Process); USES (Uses)  
 (focusing of microparticles in microfluidic systems)  
 IT 9027-67-2, Terminal deoxynucleotide transferase  
 RL: ARG (Analytical reagent use); CAT (Catalyst use); ANST (Analytical study); USES (Uses)  
 (focusing of microparticles in microfluidic systems)  
 IT 2321-07-5D, Fluorescein, conjugates with (deoxy)nucleotides  
 RL: ARG (Analytical reagent use); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent); USES (Uses)  
 (focusing of microparticles in microfluidic systems)  
 RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE

- (1) Altendorf; US 6067157 A 2000 HCAPLUS
- (2) Goodwin; US 6049380 A 2000 HCAPLUS
- (3) Gourley; US 5608519 A 1997 HCAPLUS
- (4) Kessler, B; Nature 1985, V313, P218
- (5) Knight; Physical Review Letters 1998, V80(17), P3863 HCAPLUS
- (6) Kononenko; Journal of Chromatography 1991, V553, P517 HCAPLUS
- (7) Ramsey; US 5858187 A 1999
- (8) Shera; US 4793705 A 1988 HCAPLUS
- (9) Watson; Cytometry 1999, V38, P2 MEDLINE
- (10) Weigl; US 5972710 A 1999 HCAPLUS

L26 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN  
 AN 2000:756609 HCAPLUS  
 DN 133:293180  
 ED Entered STN: 27 Oct 2000  
 TI The use of microfluidic systems in the electrochemical detection of target analytes  
 IN Kayyem, Jon Faiz  
 PA Clinical Micro Sensors, Inc., USA  
 SO PCT Int. Appl., 119 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM B01L003-00  
 ICS C12Q001-68; G01N033-543  
 CC 9-1 (Biochemical Methods)  
 Section cross-reference(s): 3, 14, 76  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000062931	A1	20001026	WO 2000-US10903	20000421 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2370879	AA	20001026	CA 2000-2370879	20000421 <--
EP 1183102	A1	20020306	EP 2000-923580	20000421 <--
EP 1183102	B1	20031217		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002542461	T2	20021210	JP 2000-612061	20000421 <--
AT 256500	E	20040115	AT 2000-923580	20000421 <--
EP 1391241	A1	20040225	EP 2003-22729	20000421 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY				
AU 771571	B2	20040325	AU 2000-43680	20000421 <--
PT 1183102	T	20040531	PT 2000-923580	20000421 <--
ES 2213009	T3	20040816	ES 2000-923580	20000421 <--
PRAI US 1999-295691	A	19990421	<--	

EP 2000-923580 A3 20000421 <--  
 WO 2000-US10903 W 20000421 <--

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000062931	ICM	B01L003-00
	ICS	C12Q001-68; G01N033-543
WO 2000062931	ECLA	B01L003/00C6M; C12Q001/68B2H+565/629+563/113; G01N033/543K2B
EP 1391241	ECLA	B01L003/00C6M; G01N033/543K2B
AB	The microfluidic system can comprise a solid support that has a sample inlet port, a first microchannel, a storage module (e.g., for assay reagents) and a second microchannel. The second microchannel may be in fluid contact directly with the detection module comprising a detection electrode, or a self-assembled monolayer and a binding ligand. The device can contain a sample handling well and a second storage well with a microchannel leading to the sample handling well. The sample handling well could be a cell lysis chamber and the storage well could contain lysis reagents. The device can contain a sample handling well that is a cell capture or enrichment chamber, with an addnl. reagent storage well for elution buffer. The device may contain a reaction module with a storage module, e.g., for storage of amplification reagents. An optional waste module can be connected to the reaction module via a microchannel. The device may contain addnl. separators, valves, waste wells, and pumps, including addnl. electrodes. The microfluidic systems may be used for amplification and detection of nucleic acids, proteins or other biochem. analytes in biol. samples or cells.	
ST	microfluidic system electrochem detection target analyte; nucleic acid electrochem detection microfluidic system; protein electrochem detection microfluidic system; diagnosis microfluidic system electrochem detection; lab chip electrochem detection target analyte	
IT	Analytical apparatus (biochem.; microfluidic systems for electrochem. detection of target analytes)	
IT	Flow Gel electrophoresis (capillary; microfluidic systems for electrochem. detection of target analytes)	
IT	Flow (electrohydrodynamic; microfluidic systems for electrochem. detection of target analytes)	
IT	Capillary electrophoresis (gel; microfluidic systems for electrochem. detection of target analytes)	
IT	Micromachines (microelectromech. systems (MEMS); microfluidic systems for electrochem. detection of target analytes)	
IT	Analytical apparatus Blood cell Capillary tubes Cell Clinical analyzers Cytolysis Diagnosis Electric circuits Electrohydrodynamics Electroosmosis Electrophoresis apparatus Gel electrophoresis apparatus Integrated circuits Microsensors Nucleic acid amplification (method) Plasmids Self-assembled monolayers (microfluidic systems for electrochem. detection of target analytes)	

IT DNA  
Nucleic acids  
Oligonucleotides  
Peptide nucleic acids  
Proteins, general, analysis  
RNA  
mRNA  
rRNA  
RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)  
(microfluidic systems for electrochem. detection of target analytes)

IT Ligands  
RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)  
(microfluidic systems for electrochem. detection of target analytes)

IT Probes (nucleic acid)  
RL: BUU (Biological use, unclassified); DEV (Device component use); BIOL (Biological study); USES (Uses)  
(microfluidic systems for electrochem. detection of target analytes)

IT Laboratory ware  
(reaction vessels; microfluidic systems for electrochem. detection of target analytes)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Clinical Micro Sensors Inc; WO 9857159 A 1998 HCAPLUS
- (2) Fodor, S; US 5856174 A 1999
- (3) Harvard College; WO 9831839 A 1998 HCAPLUS
- (4) Meso Scale Technologies Llc; WO 9812539 A 1998 HCAPLUS
- (5) Southgate, P; US 5863502 A 1999
- (6) Wilding, P; US 5866345 A 1999 HCAPLUS

L26 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:493703 HCAPLUS

DN 133:86449

ED Entered STN: 21 Jul 2000

TI Optimized high-throughput analytical system and method

IN Kopf-Sill, Anne R.; Chow, Andrea W.

PA Caliper Technologies Corp., USA

SO PCT Int. Appl., 41 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C12Q001-00

ICS C12Q001-68; G01N033-53; G01N033-567

CC 9-1 (Biochemical Methods)

Section cross-reference(s): 79, 80

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000042212	A1	20000720	WO 2000-US1268	20000118 <--
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6150119	A	20001121	US 1999-233700	19990119 <--
CA 2360013	AA	20000720	CA 2000-2360013	20000118 <--
EP 1144674	A1	20011017	EP 2000-906956	20000118 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002534700	T2	20021015	JP 2000-593769	20000118 <--

Search done by Noble Jarrell

AU 767342	B2	20031106	AU 2000-28533	20000118 <--
US 6511853	B1	20030128	US 2000-630866	20000802 <--
PRAI US 1999-233700	A	19990119	<--	
WO 2000-US1268	W	20000118	<--	

## CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES	
WO 2000042212	ICM	C12Q001-00	
	ICS	C12Q001-68; G01N033-53; G01N033-567	
WO 2000042212	ECLA	G01N027/447B4	<--
US 6150119	NCL	435/007.100; 204/400.000; 204/451.000; 205/777.500; 366/DIG.002; 422/050.000; 422/068.100; 422/081.000; 422/082.000; 435/004.000; 435/006.000; 435/007.200; 436/157.000; 436/501.000; 436/514.000	
	ECLA	G01N027/447B4	<--
EP 1144674	ECLA	G01N027/447B4	<--
US 6511853	NCL	436/514.000; 204/403.010; 422/081.000; 422/082.000; 422/100.000; 435/007.100; 435/007.200; 435/287.200; 436/517.000	
	ECLA	G01N027/447B4	<--
AB		Throughput rates for microfluidic serial anal. systems are optimized by maximizing the proximity and speed with which multiple different samples may be serially introduced into a microfluidic channel network. Devices are included that include optimized parameters based upon desired throughput rates for a given set of reagents, reaction times and the like.	
ST		optimized throughput microfluidic analysis app	
IT		Materials (biochems., test compds. effect on; optimized high-throughput anal. system and method)	
IT		Capillary tubes (microfluidic channels; optimized high-throughput anal. system and method)	
IT		Analysis Analytical apparatus Diffusion Flow Fluids Nucleic acid hybridization Vacuum Zeta potential (optimized high-throughput anal. system and method)	
IT		Reagents RL: ARG (Analytical reagent use); DEV (Device component use); ANST (Analytical study); USES (Uses) (optimized high-throughput anal. system and method)	
IT		Polymers, uses RL: DEV (Device component use); USES (Uses) (substrates based on, forming microfluidic channel; optimized high-throughput anal. system and method)	
IT		Nucleic acids RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process) (test compds. effect on interaction of, with complementary nucleic acids; optimized high-throughput anal. system and method)	
IT		Receptors RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process) (test compds. effect on interaction of, with ligands; optimized high-throughput anal. system and method)	
IT		Ligands RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process) (test compds. effect on interaction of, with receptors; optimized high-throughput anal. system and method)	
IT		Enzymes, properties RL: PEP (Physical, engineering or chemical process); PRP (Properties);	

PROC (Process)  
    (test compds. effect on interaction of, with substrates; optimized  
    high-throughput anal. system and method)

IT Cell  
    (test compds. effect on; optimized high-throughput anal. system and  
    method)

IT 7631-86-9, Silica, uses  
    RL: DEV (Device component use); USES (Uses)  
    (substrates based on, forming microfluidic channel; optimized  
    high-throughput anal. system and method)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Effenhauser; Anal Chem 1993, V65(19), P2637 HCAPLUS
- (2) Jacobson; Anal Chem 1994, V66(7), P1114 HCAPLUS
- (3) Jacobson; Anal Chem 1995, V67(13), P2059 HCAPLUS
- (4) Jacobson; Anal Chem 1995, V16, P481 HCAPLUS
- (5) Kopf-Sill; US 5957579 A 1999
- (6) Manz; Sensors and Actuators 1990, VB1, P244 HCAPLUS
- (7) Parce; US 5942443 A 1999 HCAPLUS
- (8) Seiler; Anal Chem 1993, V65(10), P1481 HCAPLUS
- (9) Wilding; US 5304487 A 1994 HCAPLUS
- (10) Wilding; US 5498392 A 1996 HCAPLUS
- (11) Zanzucchi; US 5585069 A 1996 HCAPLUS

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